
Outcomes for Women and Infants Following Assisted Conception: Implications for Perinatal Education, Care, and Support

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ABSTRACT

Assisted conception is becoming an increasingly more common treatment option for women and couples who experience fertility problems. Links have been made in the literature between assisted conception and a greater incidence of pregnancy or birth complications, low birth weight or premature babies, and babies with congenital abnormalities. In addition, evidence suggests that the experience of assisted conception may influence the development of early mothering relationships and impact parenting adjustment. Although this commentary article does not strategically review all available literature, it provides an overview of the health issues that women and families undergoing assisted conception have experienced or may experience. Through raising awareness and promoting discussion of these issues, practitioners will be better equipped to provide informed education and support.

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The first type of assisted conception, donor insemination, occurred in the 19th century with ongoing technological improvements throughout the 20th century leading to the first baby born as a result of in vitro fertilization in 1978. Advances in reproductive technology have led to several treatment options, including in vitro fertilization and intracytoplasmic sperm injection, with in vitro fertilization being the most common procedure. In addition, insemination

by a partner or donor, or utilization of eggs and/or embryos from a donor female or couple, can be used in fertility treatment.

Fertility rates are on the decline (World Health Organization, 2009) with assisted reproductive technology becoming an increasingly more accessible and necessary option. Improvements in clinical management, technology, and regulation have led to better outcomes for individuals undergoing assisted

conception. However, despite improvements in the success rate for assisted conception, most treatment cycles* do not result in a successful pregnancy, and the process of assisted conception is associated with several health and psychosocial problems. The social, emotional, and financial burden of treatment for individuals and families is significant. Additional matters to consider are the bioethical, moral, and legal issues that are contemplated in the public forum by society in general. Debate continues regarding the place of women and motherhood within the complex and contested discourse of reproduction and, more specifically, assisted conception (Lupton, 2003).

For perinatal educators, an understanding of the impact of assisted conception will enable informed and sensitive education and support for women and their families. This article provides an overview of issues relating to assisted conception and how they may impact the health and well-being of women and infants. As a commentary article, not all literature relating to the topic is strategically reviewed here; rather, our aim is to provide an overview of the health issues that women and families undergoing assisted conception may experience.

IMPACT OF ASSISTED CONCEPTION ON PREGNANCY AND BIRTH

Since the first attempts at in vitro fertilization in the 1970s, the knowledge base regarding assisted conception has grown significantly, with research focusing on the influence of assisted conception on pregnancy, birth, and the postnatal period. The literature suggests that women who conceive with the assistance of reproductive technology are more likely to experience complications during pregnancy, to receive medical interventions during labor, and to give birth to a compromised baby. These complication rates may be attributable in part to the higher risk associated with multiple births, which occur more often among women who undergo assisted conception (Adamson & Baker, 2004). However, with the advancement of assisted conception techniques and an increasing adherence to policies of single embryo transfer, the incidence of multiple pregnancies and births has decreased. For example, in Australia and New Zealand, the overall multiple gestation birth

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rates for assisted conception pregnancies have decreased from 16.4% in 2004 to 8.4% in 2008, whereas the clinical pregnancy rates remained consistent at 22.6% per cycle (Wang, Chambers, & Sullivan, 2010). However, even when accounting for the influence of multiple pregnancies, women who undergo assisted conception continue to be at increased risk of complications during pregnancy. For example, they have an increased rate of miscarriage (McManus & McClure, 2002), vaginal bleeding (Ochsenkühn et al., 2003), antepartum hemorrhage, and placenta previa (Thomson, Shanbhag, Templeton, & Bhattacharya, 2005). The incidence of preeclampsia is also more common following assisted conception (Thomson et al., 2005; Yasmin, Hassan, Vanga, Subramaniam, & Adeghe, 2006) and is more likely to occur in women who have polycystic ovarian disease (Kashyap & Claman, 2000).

Women who have undergone assisted conception are more likely to experience interventions at the time of labor and birth, including labor induction, instrumental birth, or emergency cesarean surgery (Hammarberg, Fisher, & Rowe, 2008; Romundstad et al., 2008; Thomson et al., 2005). The rates of elective cesarean surgery are also higher among women who have undergone assisted conception (Sullivan, Chapman, Wang, & Adamson, 2010). In a comparative study conducted in Australia, Hammarberg et al. (2008) found that women who had assisted conception and then had cesarean surgery reported lower feelings of involvement in decision making regarding their birth than women who had cesarean surgery following natural conception. These women were also less likely to hold their baby immediately following birth and more likely to feel disappointed with their birth experience (Hammarberg et al.).

The literature suggests that women older than 35 years old are significantly more likely to have interventions and encounter problems during pregnancy and birth (Laws, Abeywardana, Walker, & Sullivan, 2007). However, although age may compound risk factors for women following assisted conception, it cannot entirely explain their higher risk. A meta-analysis by McDonald, Murphy, Beyene, and Ohlsson (2005), for example, found that when matched for maternal

* One treatment cycle encompasses the period from the commencement of ovarian stimulation to the transfer of the embryo.

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age, in vitro fertilization singleton pregnancies had poorer obstetric outcomes compared to naturally conceived pregnancies.

IMPACT OF ASSISTED CONCEPTION ON THE INFANT AND POSTNATAL PERIOD

Significantly, assisted conception also seems to influence infant outcomes, with the rates of premature birth higher following assisted conception treatment for both singleton and multiple pregnancies (De Neubourg et al., 2006; Ombelet et al., 2006). Babies conceived using assisted conception are also more likely to be of low birth weight, whether they be of singleton or multiple pregnancy and regardless of their gestation (Ombelet et al., 2006; Thomson et al., 2005; Wang et al., 2005). Some studies identified a link between assisted conception and both minor and major congenital abnormalities (Belva et al., 2007; Buckett et al., 2007; Olivennes, 2005; Zhu, Basso, Obel, Bille, & Olsen, 2006). Because of these problems, babies born following assisted conception are more likely to be separated from their mothers and admitted to a special care nursery because of birth complications, prematurity, low birth weight, and congenital abnormality (Klemetti, Sevón, Gissler, & Hemminki, 2006; Manoura et al., 2004; Ombelet et al., 2006).

There appears to be some disagreement regarding the possible cause of an increased risk of complications following assisted conception. Some research findings indicate that the assisted conception procedures themselves may create problems. For example, Wang, Norman, and Kristiansson (2002) found that high-tech assisted conception techniques such as in vitro fertilization and in vitro fertilization and intracytoplasmic sperm injection increase the risk of premature birth compared to intrauterine insemination. The increased risk for women using assisted conception may also be related to underlying physiological characteristics associated with infertility. Findings of several studies indicate that a history of infertility, regardless of method of conception, increases the risks of perinatal death, preeclampsia, gestational diabetes, placenta previa, placental abruption, low

birth weight, and premature birth (Thomson et al., 2005; Yasmin et al., 2006).

Romundstad et al. (2008) conducted a large study examining the outcomes for women who had conceived naturally but had a previous baby conceived via assisted conception. There was no difference in perinatal outcomes between siblings, suggesting that the adverse outcomes of assisted conception could be related to the underlying causes of infertility rather than to the assisted conception process itself. The increased risk of preeclampsia among women who have polycystic ovary disease (Kashyap & Claman, 2000) further supports the notion that underlying physiology influences pregnancy outcomes.

IMPACT OF ASSISTED CONCEPTION, PSYCHOSOCIAL HEALTH, AND WELL-BEING

In reviewing the evidence regarding the influence of assisted conception and psychosocial factors, the experience of infertility and undergoing assisted conception may influence psychosocial health and well-being, reduce self-esteem, increase anxiety and depression, and negatively impact relationships with partners (Kee, Jung, & Lee, 2000; Pasch, Dunkel-Schetter, & Christensen, 2002). After becoming pregnant, women who conceive via assisted conception continue to be more concerned about miscarriage and their baby's health than women who conceive naturally (Hjelmstedt, Widström, Wramsby, & Collins, 2003; Hjelmstedt, Widström, Wramsby, Matthiesen, & Collins, 2003).

The postnatal period is crucial for establishing the mother-baby relationship and breastfeeding. There are conflicting research findings regarding the adjustment to motherhood for women with assisted conception babies. Some studies suggest that these mothers have lower self-esteem and self-efficacy, experience higher levels of anxiety and depression, and report having more difficult babies and more problems in their relationships with partners (Gibson, Ungerer, Tennant, & Saunders, 2000; Hjelmstedt, Widström, Wramsby, & Collins, 2004; McMahon, Ungerer, Tennant, & Saunders, 1997). Fisher, Hammarberg, and Baker (2005) conducted an audit of mother-infant dyads admitted to a specialist residential early parenting program. Women who had conceived via assisted conception were overrepresented among admissions, and the authors concluded that assisted conception is associated with a significantly increased rate of early parenting difficulties. In contrast, other studies found no

difference between assisted conception and nonassisted conception mothers in their adjustment to parenting (Cox, Glazenbrook, Sheard, Ndukwe, & Oates, 2006; Greenfield & Caruso Klock, 2001). In some studies, assisted conception was actually associated with an increase in positive mothering experiences and higher levels of satisfaction with parenthood (Repokari et al., 2006; Ulrich, Gagel, Hemmerling, Parstor, & Kentenich, 2004).

WORKING WITH WOMEN WHO HAVE EXPERIENCED ASSISTED CONCEPTION

There is a tendency to report assisted conception in terms of physiological and psychological parameters, with little in the literature regarding the needs of women who have experienced assisted conception and appropriate perinatal education, care, and support. Van Empel et al. (2010) described inadequacy in terms of patient centeredness in fertility care, particularly in relation to emotional support and continuity of care.

In a recent discussion paper, Mounce (2009) suggested that midwives need comprehensive knowledge of assisted conception to inform their midwifery practice, and that the new techniques and ethical dilemmas regarding embryo research raise social and legal issues that may impact future midwifery practice. Frith (2009) described the ethical issues facing midwives in the United Kingdom and the importance of following the debate regarding assisted conception as well as being informed of its influence on pregnancy, birth, and the postnatal period.

Considering what is known about the issues surrounding assisted conception, optimal care and support for women and families might include the following:

- understanding the process of reproductive technology and the impact it may have on the woman's perspective of pregnancy and birth;
- acknowledging that prior to a successful pregnancy, there may have been pregnancy loss and disappointment;
- understanding that women who have an assisted conception are more likely to experience pregnancy complications and neonatal problems and that their labor and birth may include multiple interventions; and
- recognizing that the postnatal period is an ideal time to focus on the development of the mother-baby relationship and provide support for early

parenting, and that women who have undergone assisted conception may require additional support and an understanding of their needs, which will improve outcomes for both women and infants.

CONCLUSION

Assisted conception is becoming increasingly common with several techniques available and success rates improving. However, women who conceive using assisted conception are more likely to experience complications during pregnancy and birth. Their babies are also more likely to be of low birth weight or be born prematurely or with congenital abnormalities. These increased risks remain even when maternal age and multiple pregnancies are taken into account. It is unclear whether complications are associated with the reproductive technologies used to achieve pregnancy or with underlying physiological factors associated with infertility. The experience of assisted conception may also influence the early mothering relationship. Some studies suggest adjusting to parenthood is more challenging following assisted conception, whereas others suggest assisted conception may increase positive mothering experiences. Further research is required to explore women's experience of assisted conception and early mothering.

This article provides a discussion of the literature regarding assisted conception and demonstrates that assisted conception is increasingly becoming part of the reality of many women and couples in their pursuit of parenthood. Through awareness of the potential physiological and psychological impact that the experience of assisted conception has on clients across the perinatal continuum, maternity care providers will be better prepared for the early identification and treatment of issues and for the provision of additional supports as necessary. As more women and their families seek assistance to conceive, an understanding of the context and complexity of assisted conception is important because it informs the practice of individuals working with women and families during the childbearing years.

For health professionals working with women across the perinatal continuum, knowledge of the impact of assisted conception is important in order to inform appropriate care and education. The potential for intervention in labor and birth and possible subsequent separation of mother and baby suggests that tailored support may be appropriate. Focused support for women who have experienced assisted conception is to a large extent informally

available through support networks or, as described by Toscano and Montgomery (2009), through online communities. Often well-informed about the technical nature of the assisted conception process and cognizant of the benefits and risks, women in this group may appreciate acceptance and acknowledgment of their journey and potential additional needs. Further research to evaluate the efficacy of different forms of focused support is needed.

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